Trend Study14-32-99

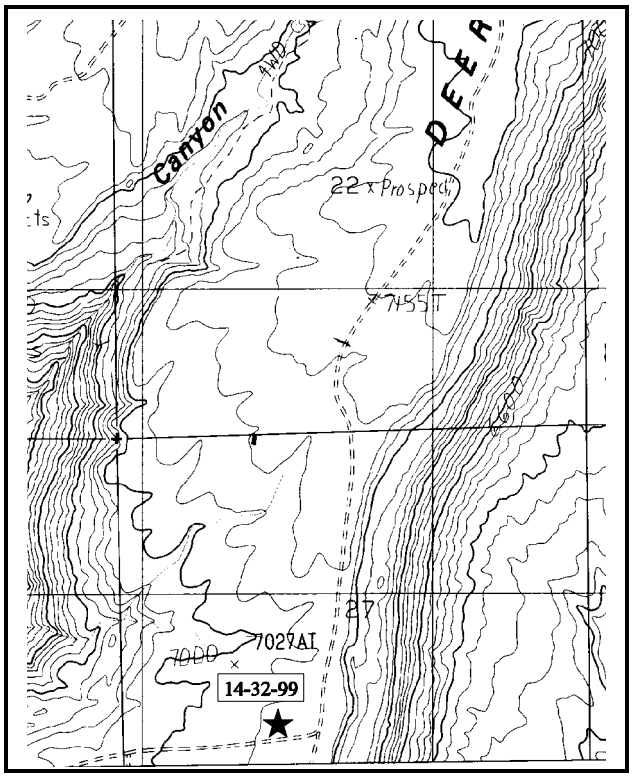
Study site name: Lower Deer Flat . Range type: Sagebrush-Grass.

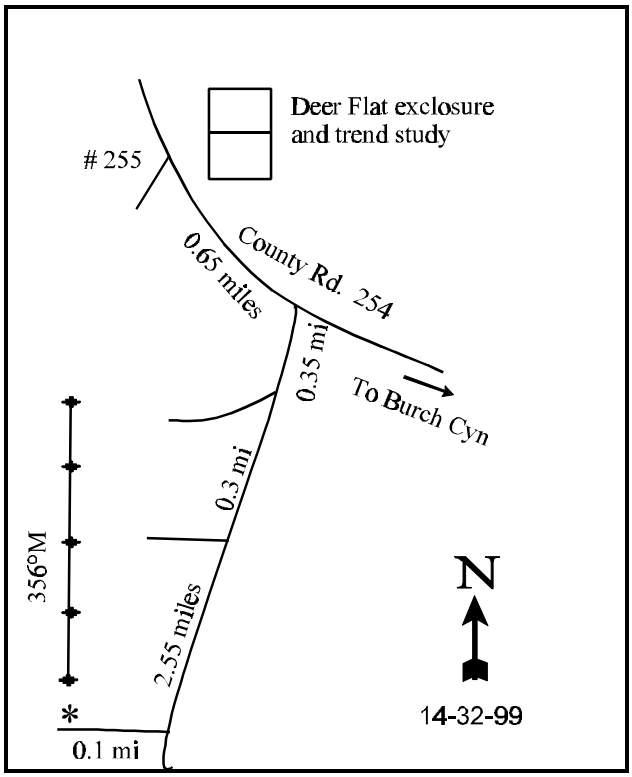
Compass bearing: frequency baseline 356°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1(11 and 71 ft), line 2(34 ft), line 3(59 ft), line 4(95 feet).

LOCATION DESCRIPTION

At the intersection 2.45 miles southwest of the turnoff to Kigalia Guard Station and almost 2 miles northeast of the Bears Ears, turn west and proceed 2.0 miles to a cattleguard near a corral. Continue straight on this road, ignoring the turnoffs near the corral, for 1.75 miles to a fork. Stay left and continue 1.5 miles to a cattleguard at the FS/BLM boundary. After 2.4 more miles stay to the right at a fork under a stock pond. Continue 0.65 miles to another fork. Stay left. Proceed 0.6 more miles and stay left at the fork. Go 1.90 miles to an exclosure on the east side of the road. From the fork where county roads 254 and 255 split, go left on Road 254 for 0.65 miles to a fork. Turn right and go 0.35 miles to another fork. Stay left for 0.3 miles to another fork. Stay left for 2.55 miles to another fork. Turn right on a faint two-track for 0.15 miles to a witness post. The 0-foot stake is 19 paces at 342°M from the witness post.





Map name: Woodenshoe Butte Diagrammatic Sketch

Township 36S , Range 18E , Section 19 UTM 4164541.475 N, 585401.503 E

DISCUSSION

Trend Study No. 14-32

Lower Deer Flat is a new trend study site established in 1994 to replace 14-17, Deer Flat. Since the sagebrush at the original Deer Flat site was treated and seeded, deer no longer utilize the area in the winter in large numbers. The Lower Deer Flat study site was established about 3 miles further south in an old chaining where deer winter in larger numbers. The new study area has a 3% slope with a southwest aspect and an elevation of about 7,200 feet. This area is administered by the BLM and grazed on the same schedule as the previous deer flat study site (14-17). Two pastures are used in a rotation system in which one pasture is grazed June 1 to Aug 15 one year then from Aug 16 to Oct 31 the next. There are 400 cattle currently allotted to the unit. Pellet group data from 1999 estimate 121 deer days use/acre (299 ddu/ha), 1 elk days use/acre (2 edu/ha), and 40 cow days use/acre (99 cdu/ha). Deer pellet groups were primarily from the previous winter ('98). Cattle are currently in the area.

Soils here are similar to the original Deer Flat study site. It is a very compact loam with an effective rooting depth estimated at only a little over 12 inches. Soil depth measurements were limited by the compact soil, but there does not appear to be any rooting barriers in the soil profile. The soil has limited amounts of phosphorus and potassium at 4.5 and 51.2 ppm respectively. Values less than 10 ppm for phosphorus and 70 ppm for potassium limit normal plant growth and development. Average soil temperature is very high at 74.2°F at a depth of almost 13 inches. This condition gives winter annuals like cheatgrass a competitive advantage over cool season perennial grasses and forbs. Especially the establishment of sagebrush seedlings. Areas that were sprayed to kill sagebrush, about 1 mile east of the study site, are now dominated by cheatgrass. There is quite a bit of bare ground exposed, but erosion is minimal due to the abundant herbaceous vegetation cover and chaining debris.

The site supports a dense stand of heavily hedged Wyoming big sagebrush. It provided 92% of the browse cover in 1994 with an estimated density of 7,140 plants/acre. Utilization was mostly light but vigor was poor on 50% of the plants sampled in 1994. Percent decadence was low at just 17%, but 40% of the decadent plants sampled (500 plants/acre) were classified as dying. Density declined to 5,160 plants/acre by 1999. Use is moderate to heavy but vigor improved and percent decadence still low at 19%. The heavy use with drought, has caused low annual growth and poor seed production and many plants displayed a clubbed growth form. No seedlings were encountered in 1999, however young plants are abundant and account for 22% of the population. There are also a few heavily utilized fourwing saltbush scattered on the site.

Pinyon and juniper trees are found at a relatively low density considering the age of the chaining. Point quarter data from 1999 estimate 32 pinyon and 45 juniper trees/acre with an average diameter of 3 inches and 4.4 inches respectively. Twelve percent of the juniper trees sampled consisted of large knocked down trees (tipped over) that are still living.

The herbaceous understory is dominated by crested wheatgrass which provided 73% of the grass cover in 1994 and 67% of the herbaceous cover. It increased significantly in nested frequency in 1999 and now provides 88% of the grass cover and 83% of the herbaceous cover. There are several other perennial grasses present including, Indian ricegrass, bottlebrush squirreltail, and needle-and-thread grass. Annual cheatgrass is also present in low densities, but it has increased significantly in nested frequency since 1994. Forbs are rare and produce only about 1% total cover. The only fairly common species include timber poisonvetch, longleaf phlox, and scarlet globemallow.

1994 APPARENT TREND ASSESSMENT

The soil trend appears to be stable due to abundant litter and herbaceous cover combined with the gentle terrain. The Wyoming big sagebrush population appears to be relatively stable. Percent decadence is low at

17% and recruitment is good. Vigor is poor on half of the population however, and about 500 of the 1,240 decadent plants/acre appear to be dying. Recruitment is good and there appears to be enough young plants to replace decadent and dying plants. The herbaceous understory appears to be in good condition with several moderately abundant grasses. Crested wheatgrass dominated the composition however, by providing 73% of the grass cover. Annual cheatgrass is also present but only in low abundance. Forbs are lacking.

1999 TREND ASSESSMENT

Trend for soil appears stable. Percent cover of bare ground has increased slightly but so has litter cover. There is little erosion occurring due to levelness of the terrain. Trend for Wyoming big sagebrush is down slightly. It is being heavily browsed and density has declined from 7,140 to 5,160 plants/acre. Vigor is improved however, with only 10% of the plants sampled displaying poor vigor, down from 50% in 1994. Percent decadence remains low at 19%. The heavy use with drought has caused low annual growth and poor seed production. No seedlings were found, but young plants are still abundant. Trend for the herbaceous understory is stable. Sum of nested frequency of grasses and forbs both declined slightly, although the dominant grass, crested wheatgrass, has increased significantly in nested frequency. It currently provides 88% of the grass cover and 83% of the total herbaceous cover. Annual cheatgrass is found on the site in low abundance but it also has increased significantly in nested frequency. There is still several moderately abundant native perennial grasses present, yet forbs are lacking.

TREND ASSESSMENT
soil - stable
browse - down slightly
herbaceous understory - stable

HERBACEOUS TRENDS --
Herd unit 14 , Study no: 32

Type	Species	Nested Frequency '94	'99	Quadrat Frequency '94	'99	Average Cover % '94	'99
G	Agropyron cristatum	198	*291	65	89	9.43	12.62
G	Agropyron intermedium	2	-	1	-	.00	-
G	Bouteloua gracilis	-	2	-	2	-	.01
G	Bromus tectorum (a)	35	*103	15	34	.24	.81
G	Oryzopsis hymenoides	58	*23	26	9	.81	.19
G	Poa fendleriana	12	*-	6	-	.34	-
G	Sitanion hystrix	39	17	16	11	.71	.26
G	Sporobolus cryptandrus	3	-	1	-	.00	-
G	Stipa comata	94	*41	33	17	1.44	.40
Total for Annual Grasses		35	103	15	34	0.24	0.81
Total for Perennial Grasses		406	374	148	128	12.76	13.49
Total for Grasses		441	477	163	162	13.00	14.30
F	Astragalus convallarius	18	15	12	8	.67	.43
F	Crepis acuminata	3	6	1	4	.00	.02
F	Descurainia pinnata (a)	-	5	-	1	-	.00

Type	Species	Nested Frequency '94	'99	Quadrat Frequency '94	'99	Average Cover % '94	'99
F	Erigeron spp.	9	*-	3	-	.01	-
F	Lappula occidentalis (a)	4	3	2	1	.01	.00
F	Machaeranthera spp	2	-	1	-	.00	-
F	Microsteris gracilis (a)	-	1	-	1	-	.00
F	Orthocarpus spp. (a)	15	*-	9	-	.04	-
F	Phlox longifolia	91	105	33	40	.19	.32
F	Sphaeralcea coccinea	29	18	12	7	.08	.08
Total for Annual Forbs		19	9	11	3	0.05	0.01
Total for Perennial Forbs		152	144	62	59	0.97	0.86
Total for Forbs		171	153	73	62	1.03	0.87

* Indicates significant difference at % = 0.10

BROWSE TRENDS --
Herd unit 14 , Study no: 32

Type	Species	Strip Frequency '94	'99	Average Cover % '94	'99
B	Artemisia tridentata wyomingensis	87	80	12.77	11.80
B	Atriplex canescens	0	1	-	.38
B	Chrysothamnus nauseosus	0	0	-	-
B	Chrysothamnus viscidiflorus	1	3	-	.15
B	Juniperus osteosperma	0	3	1.01	1.23
B	Opuntia spp.	1	0	.00	-
B	Pinus edulis	-	-	.15	-
Total for Browse		89	87	13.94	13.57

CANOPY COVER --
Herd unit 14 , Study no: 32

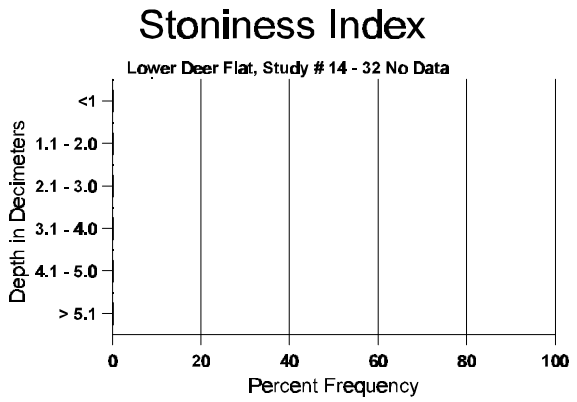
Species	Percent Cover '99
Juniperus osteosperma	.20

BASIC COVER --
Herd unit 14 , Study no: 32

Cover Type	Nested Frequency '94	'99	Average Cover % '94	'99
Vegetation	359	369	28.21	27.89
Rock	3	-	.15	0
Litter	496	465	41.73	43.37
Cryptogams	15	34	.22	.49
Bare Ground	360	372	30.60	36.52

SOIL ANALYSIS DATA --
Herd Unit 14, Study # 32, Study Name: Lower Deer Flat

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.4	74.2 (12.7)	7.1	46.0	29.4	24.6	1.4	4.5	51.2	0.6



PELLET GROUP FREQUENCY --
Herd unit 14 , Study no: 32

Type	Quadrat Frequency '94	'99
Rabbit	30	50
Elk	1	1
Deer	59	61
Cattle	1	4

Pellet Transect Days Use/Acre (ha) '99
N/A
1 (2)
121 (299)
40 (99)

BROWSE CHARACTERISTICS --
Herd unit 14 , Study no: 32

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	94	53	-	-	-	-	-	-	-	-	30	-	19	4	1060			53
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	94	48	-	-	-	-	-	-	-	-	14	-	34	-	960			48
	99	19	30	7	-	-	-	1	-	-	56	-	1	-	1140			57
M	94	229	7	3	8	-	-	-	-	-	138	-	108	1	4940	37	50	247
	99	18	66	53	-	1	15	-	-	-	137	4	12	-	3060	20	28	153
D	94	56	6	-	-	-	-	-	-	-	25	-	12	25	1240			62
	99	4	6	27	-	4	7	-	-	-	36	-	6	6	960			48
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	04%	.84%	50%	-28%
'99	41%	42%	10%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'94	7140	Dec:	17%
	'99	5160		19%

Atriplex canescens

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
D	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	1	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	100%	100%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'94	0	Dec:	0%
	'99	20		100%

Chrysothamnus nauseosus

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	142	9	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'94	0	Dec:	-
	'99	0		-

Chrysothamnus viscidiflorus

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	94	1	-	-	-	-	-	-	-	-	-	1	-	-	20	8	13	1
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	12	18	1
D	94	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	99	2	-	-	-	-	-	-	-	-	1	-	-	1	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	50%	+33%
'99	00%	00%	33%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'94	40	Dec:	50%
	'99	60		67%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus osteosperma																		
Y	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1
X	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	0	Dec:		-
'99	60			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
M	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	15	1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5	13	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'94	20	Dec:		-
'99	0			-